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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,204	02/23/2007	Michael John Hazelwood	41557-227572 RK	9281
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VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER AGGARWAL, YOGESH K	
			ART UNIT 2622	PAPER NUMBER
			MAIL DATE 10/05/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/565,204	<b>Applicant(s)</b> HAZELWOOD ET AL.	
	<b>Examiner</b> YOGESH K. AGGARWAL	<b>Art Unit</b> 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1- 10, 12-14, 18, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cok (US Patent # 5,040,064) in view of AAPA and in further view of Schrock (US Patent # 5,105,276).

[Claims 1 and 20]

Cok teaches Apparatus for compensating image signals produced by a CCD imager for smears, the CCD imager including (col. 1 lines 14-45), the apparatus comprising: an image data analyzer for detecting the boundaries of a smear (col. 3 line 47-col. 4 line 20); and an image data replacer for replacing data between the boundaries of a detected smear with alternative image data (col. 5 line 3-35), wherein the image data analyzer is arranged to detect the boundaries of smears produced by incomplete charge transfer (col. 3 lines 2-15 teach incomplete scanning which leads to incomplete charge transfer). Cok fails to teach a multiplication register for multiplying charge produced by the CCD imager wherein the image data analyzer is arranged to detect the boundaries of horizontal smears produced by incomplete charge transfer in the multiplication register. However AAPA teaches a multiplication register for multiplying charge produced by the CCD imager wherein the image data analyzer is arranged to detect the boundaries of horizontal smears produced by incomplete charge transfer in the multiplication register (Page 1). Therefore taking the combined teachings of Cok and AAPA, it would be obvious to one skilled

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in the art to have been motivated to have used a multiplication register for multiplying charge produced by the CCD imager wherein the image data analyzer is arranged to detect the boundaries of horizontal smears produced by incomplete charge transfer in the multiplication register as taught in AAPA to be used in the system of Cok to remove the smearing between edges so as to get a better image. Cok in view of AAPA fails to teach a subtractor for subtracting a signal corresponding to the charge accumulated during the transfer mode and transferred to the output register as lines corresponding to the at least one masked row, from the line signals corresponding to the rows of the image area and mode to produce line signals, at least one row of pixels being masked from incident radiation arranged on the side of the image area opposite the output register. However Schrock teaches a subtractor (figure 5, 55) that subtracts dark current from the ccd's image signals wherein the dark current is generated by the shielded pixels 43 (col. 3 lines 29-49, figures 5 and 6). Therefore taking the combined teachings of Cok, AAPA and Schrock, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have a subtractor for subtracting a signal corresponding to the charge accumulated during the transfer mode and transferred to the output register as lines corresponding to the at least one masked row, from the line signals corresponding to the rows of the image area and mode to produce line signals, at least one row of pixels being masked from incident radiation arranged on the side of the image area opposite the output register in order to generate an image that is free of dark current.

[Claim 2]

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Cok teaches wherein the image data analyzer comprises means for detecting the boundaries of a smear by detecting rates of change in the image data greater than a predefined limit (col. 5 lines 3-22, figure 5).

[Claim 3]

Cok teaches wherein the alternative image data is derived from image pixels neighboring the detected smear (col. 5 lines 23-35).

[Claim 4]

Cok teaches wherein the alternative image data is derived by interpolation of image data (col. 5 lines 23-35).

[Claim 5]

Cok teaches wherein the image data analyzer analyses the image line by line to detect intensity gradients greater than the predefined limit (See figure 2 wherein edges are defined for first line and for a particular region comprising lines).

[Claim 6]

Cok teaches wherein the image data analyzer comprises a kernel for analyzing a portion of the image data at a time (See figure 2, col. 3 lines 16-57).

[Claim 7]

Cok teaches wherein the kernel has a sliding window to define the portion of the image being analyzed by the kernel and moveable across the image to analyze the complete image (See figure 2, col. 3 lines 16-57).

[Claim 8]

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Cok teaches comprising a temporal integrator for integrating at least two images acquired by the CCD imager prior to boundary detection by the image data analyzer (col. 2 lines 61-68 teach a video camera which takes plurality of frames per second).

[Claim 9]

Cok teaches extracting lines or two dimensional regions as shown in figure 2. It is noted that this comprises extracting the coordinates of the smear boundaries and providing the extracted coordinates to the image data replacer.

[Claim 10]

AAPA teaches wherein the image data analyzer detects the boundaries of vertical smears produced on transfer of image data from pixels of the CCD imager (Page 2).

[Claim 12]

Schrock teaches wherein the CCD imager further comprises a store arranged between the image area and the output register (col. 4 lines 7-18).

[Claim 13]

Schrock teaches wherein the CCD sensor comprises a plurality of masked rows (fig. 6).

[Claim 14]

Schrock teaches wherein a line signal is generated corresponding to each masked row and the error signal is generated from an average of the masked row line signals (col. 1 lines 44-52).

[Claim 18]

A CCD imaging apparatus comprising apparatus according to claims 1 (col. 1 lines 14-28)

[Claim 19]

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A CCD camera comprising a CCD imager and apparatus according to claim 1 (col. 1 lines 14-28).

3. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cok (US Patent # 5,040,064), AAPA, Schrock (US Patent # 5,105,276) and further in view of Thaler (US Patent # 6,313,883).

[Claims 15-17]

Cok in view of AAPA fails to teach comprising a gain controller for varying the gain of the multiplication register for selected images or portions of images, wherein the gain is adjusted to be relatively high and relatively low on alternate lines of the image. However Thaler teaches a gain The regional control memory unit 22 comprises a memory unit in which are stored one or more region selection control tables for generating gain table select command signals that are used to selectively access the gain tables stored in storage unit 24, whereby to vary application of the gain (boost) factors that are applied to multiplier 26 on a pixel-to pixel basis and thereby to vary the enhancing effect of processing system 4 on selected portions of the image represented by luminance signal Y and chrominance signal C. The region selection control 23 is adapted to respond to operator inputs to modify operation of signal processing system 4 by selecting specific regional tables from memory unit 22, so as to vary the area of the observed image that is to be enhanced and/or vary the degree of enhancement. Fig. 4d also shows a gain table with different gains for different lines of image (col. 3 lines 54-67). Therefore taking the combined teachings of Cok, AAPA in view of Thaler, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have a gain controller for varying the gain of the multiplication register for selected images or portions of images, wherein the gain is adjusted to

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be relatively high and relatively low on alternate lines of the image so as to vary the area of the observed image that is to be enhanced and/or vary the degree of enhancement.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOGESH K. AGGARWAL whose telephone number is (571)272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yogesh K Aggarwal/  
Examiner, Art Unit 2622